

Date

14/81

From: M. P. BARNES

To: James W. Smith

Re: Silver State Mining, Inc.
Silver Creek Tailings
Summit Co., Utah

In response to comments from
your department and letter from
Dee C. Hansen, State Eng. I
have prepared to attached
information.

I have delivered a copy of
this material, to Mr Hansen,
at the State Engineer's office.

RECEIVED

Marc

JUN 8 1901

DIVISION OF
OIL, GAS & MINING

M. BARNES & ASSOCIATES, INC.

MINERAL APPRAISAL & FEASIBILITY

444 SOUTH STATE #306

SALT LAKE CITY, UTAH 84111

(801) 363-1751

May 22, 1981

DIVISION OF
OIL, GAS & MINING

Silver State Mining, Inc. has filed a Notice of Intention to Commence Mining Operations pertaining to the Silver Creek tailings located in Summit County, Utah. This operation will require the construction of two holding ponds. The largest (see figure 1) will have a maximum capacity of 1,683,000 gallons. The outside dimensions will be 165' x 165' with a maximum depth of 12' and a minimum depth of 10'. The second and smaller pond (see figure 2) will have a maximum capacity of 540,000 gallons. The outside dimension will be 100' x 100' with a maximum depth of 10' and minimum depth of 8'.

Both ponds will be constructed in alluvial material with banks maintaining a 1.5:1 slope. A two foot high berm will be constructed around each pond with an outside slope of 2:1. Berm construction will use the well graded gravel and sand mixture (GW) being removed during pond construction. Lifts of 6" to 8" will be compacted with a sheepfoot compactor and should obtain 75 to 85 percent relative density.

Pond construction will require that a gunite grout be used on the sides and bottom of each pond. Grouting will provide a secondary means of seepage control with the primary control provided by a PVC pond liner. At this point in time the exact type of liner has not been determined but several capable types are under consideration.

Solution withdrawal from each pond may require the construction of a pump well (see figures 1 and 2) for each pond. These wells will be made of 4' or 5' concrete sewer pipe placed in a vertical position. A gravity feed pipe will transfer solution from the pond to the well. A concrete plug in the bottom of each will provide seepage control.

It is important to the success of this venture that 100% solution recovery be maintained. Silver State Mining, Inc. would welcome suggestions from the State Engineer relative to insuring zero discharge capability to the ponds.

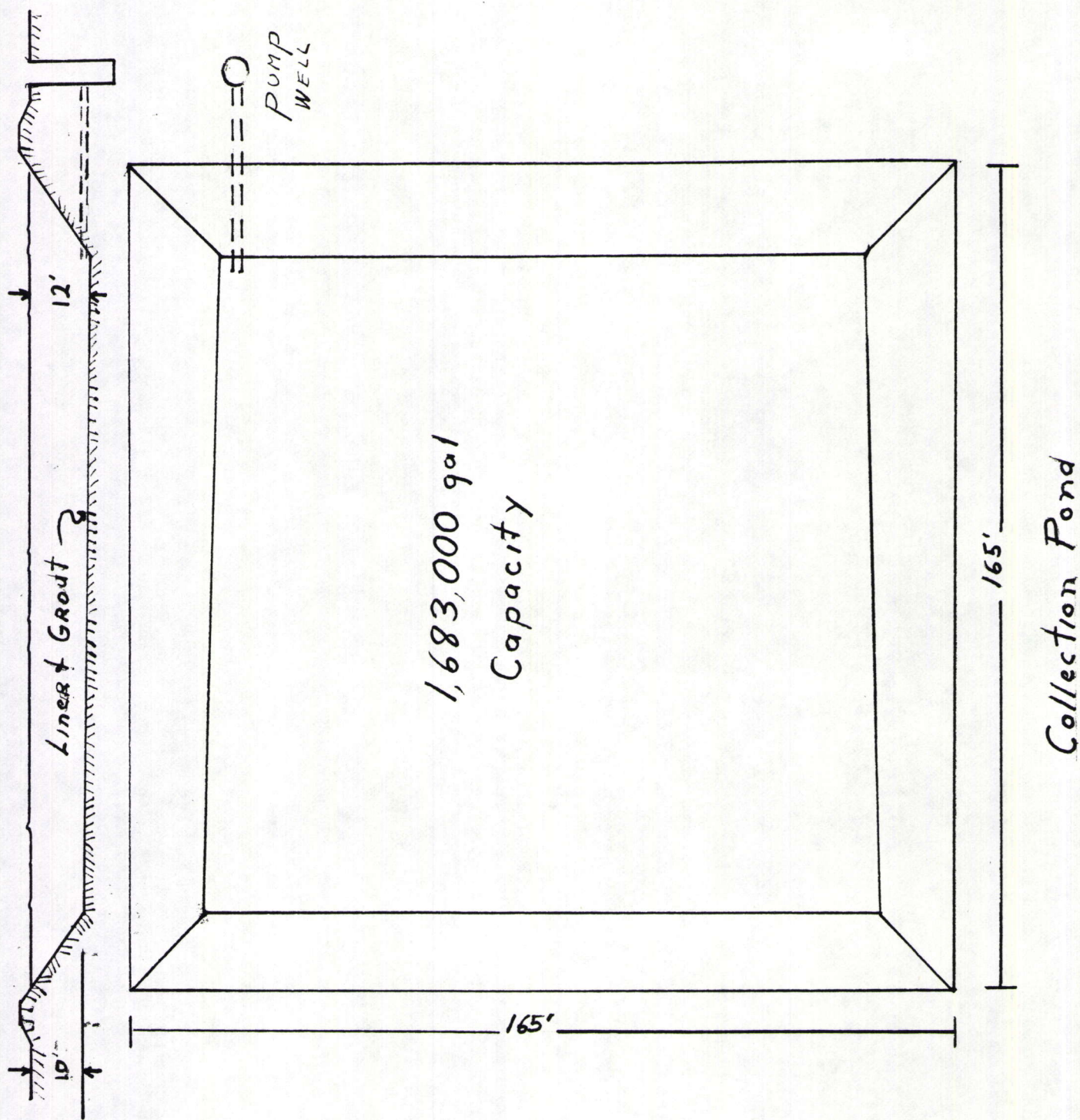


Figure 1

Barren Holding Pond

Scale 1" = 30'

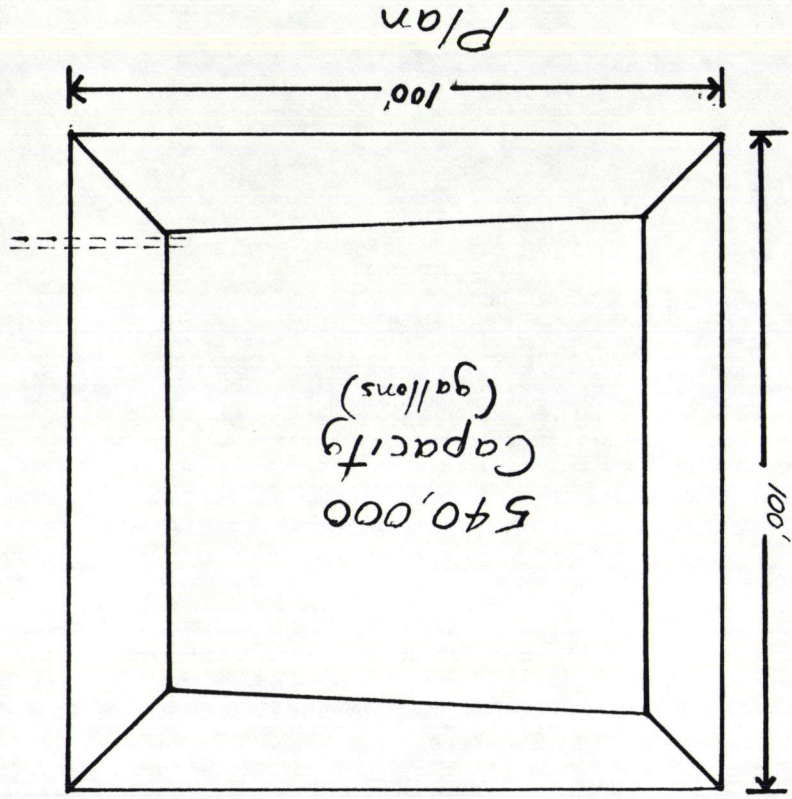
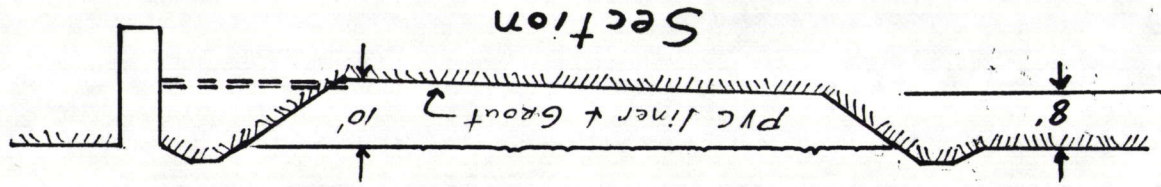


Figure 2

M. BARNES & ASSOCIATES, INC.

MINERAL APPRAISAL & FEASIBILITY

444 SOUTH STATE #306

SALT LAKE CITY, UTAH 84111

(801) 363-1751

May 22, 1981

Plan for Monitoring Possible Pad Leakage

In order to prevent contamination of the pediment and groundwater beneath the leach pads; and even more crucial to the operator - to prevent loss of pregnant solution from the leaching tailings, the pads must be well sealed with zero discharge anywhere in the closed system except for water evaporation.

Proper construction of the pad bases will involve:

1. Soil removal & storage.
2. Cut and fill to fairly uniform gradient - compacting all fill as placed.
3. Surface compaction of total pad to 70-80% density.
4. Grading and smoothing of compacted surfaces.
5. Laying down of PVC liner for final seal.

If the work is done properly there should be no leakage from the system. However, some type of monitoring device is desirable to detect inadvertant leakage due to possible system failure.

The depth to the water table at the pads is not precisely known but is at least 50 to 70 feet. Drilling wells to monitor the ground water at that depth would be very ineffective for early detection of any leakage due to the length of time required before a significant leak could seep through and be detected. Therefore it has been decided that a network of small (1.0") black PVC perforated pipe be buried in sand and gravel filled trenches 12" to 18" below the PVC liner on the compacted pads. The perforated pipe will be laid at 125' centers under all the pads and can be monitored from a single location (see figure 3). If leakage is detected from anywhere in the pad under spray, each segment can be inspected on the edge of the pad to isolate the section of failure. The failed section can then be uncovered and repaired without closing down the entire pad.

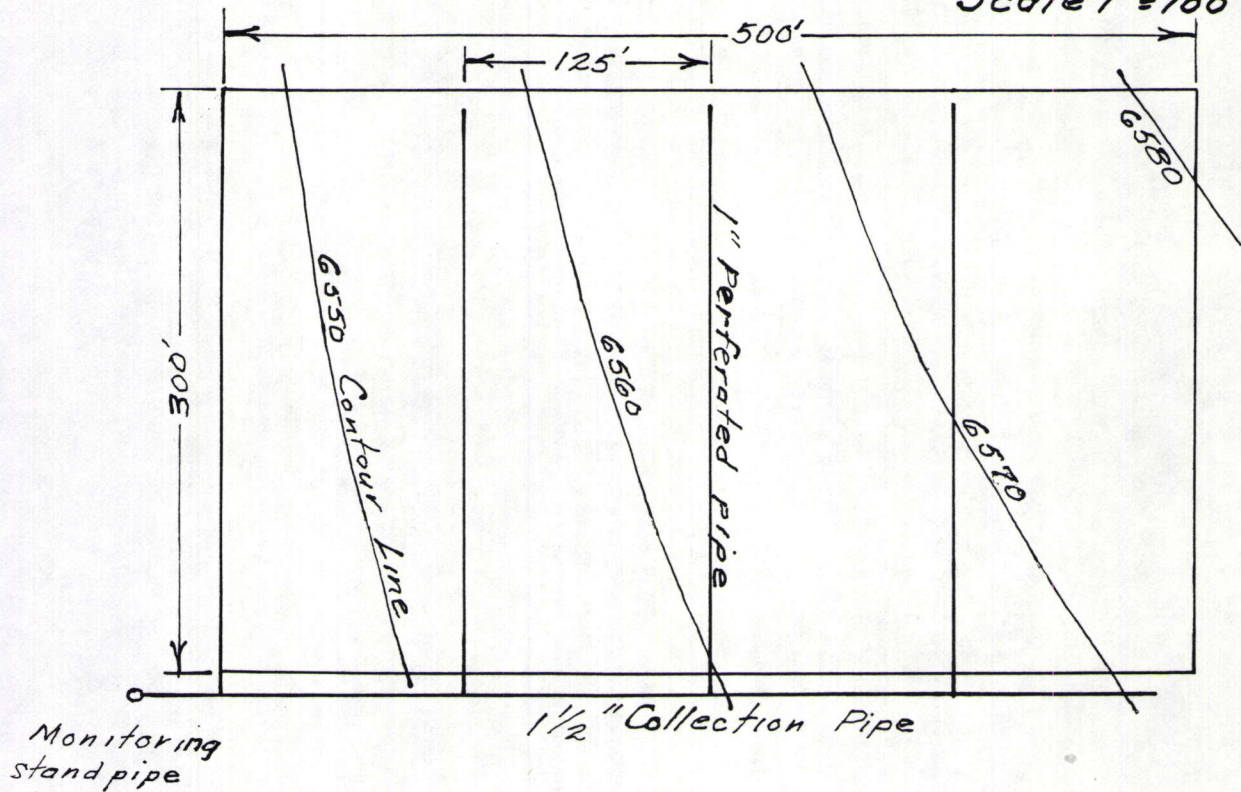
It is anticipated that the monitoring pipe network will provide early warning capabilities for pad leakage and also a measuring point for any remaining free cyanide in the leaked solution.

Figure 3

Typical Leach Pad

Plan View

Scale 1"=100'



Cross Section



Blow Up Section

